



# THE ENGINEERS

200 Years at Work for  
Australia

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An Endorsed  
Bicentennial Activity



## CHANGING APPROACHES TO EDUCATING ENGINEERS

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THE PERIOD BETWEEN the two world wars saw various changes in the approach to educating engineers in Australia. The content and standards of engineering courses came very much under the influence of the Institution of Engineers, Australia, of which William Henry Warren, Professor of Engineering in the University of Sydney, was first President.

One example of the approach to engineering studies during this period was that adopted by Edwin Whitfield, first Professor of Mining and Engineering in the University of Western Australia, which began teaching in 1913. Whitfield aimed to turn out graduates in engineering who would be cultivated citizens and who could express themselves and, if possible, have some appreciation of the humanities. He preferred broad rather than specialised training. 'The main thing is to teach engineering principles and not try to give specialised knowledge,' he said. That 'must necessarily be obtained in post-graduate practice'.



EDWIN WHITFIELD, first Professor of Mining and Engineering at the University of Western Australia.

Whitfield's views reflected his own experience. He had won first-class honours in Latin and Greek at the University of Sydney before he went on to qualify for his Bachelor of Engineering in Civil Engineering and Metal and Metallurgy. He was managing a goldmine at Sandstone in the Murchison district of Western Australia when he was appointed as one of the University's first professors. Whitfield was highly regarded in the University and became its first Vice-Chancellor.

Between the wars, the educational institutions began to develop what came to be known as the engineering science subjects. These were the basic science subjects developed and extended in those aspects that were of particular relevance to engineers and worthy of study in more detail with practical application in view. They included such subjects as properties of materials, mechanics, statics, fluid mechanics, thermodynamics, statistics and circuit theory.

Until the 1930s, the lectures, design work and practical work of courses included all that was thought to be needed as an introduction to professional practice. There were set texts that students were expected to know, and most lectures were based on them. Little outside reading was expected and few references were given, except in some of the design subjects. But





ENGINEERING STUDENTS and others at work building the ornamental pool at the University of Western Australia.

as time went on, lecturers tended more and more to outline topics and expect extensive outside reading. Students were expected to use more of their own initiative in expanding their knowledge.

Those in charge of engineering education also required and organised content of practical work in courses, to ensure that students had an adequate range and balance of experience. When the depression of the 1930s made practical experience harder to get, some students who were unable to satisfy the requirements went on to do further courses in other branches of engineering, and some became teachers. On the other hand, some students opted for shorter and less costly diploma courses offered by technical colleges, rather than those in universities.

The depression, closely followed as it was by the Second World War, led to a shortage of academically qualified engineering staff in the educational institutions. New recruits were needed not only to replace staff who retired but also to provide for the growing demands of the war and of the postwar period, when student numbers increased rapidly.

The Second World War affected engineering education in Australia in several ways. The study of the properties of materials expanded greatly and nuclear technology became an engineering field. In the early years of the war some university courses were accelerated from four years to three to increase the number of graduates available for the services and for war production. The demand had also risen for physicists in electrical engineering and chemists in such fields as combustion and rocket propulsion.

Although engineering students were among those who were 'reserved', that is exempted from military training or service, many did enlist for military service and finished their courses after the war.